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ENTOMOLOGY.[1]

POSSIBLE FOOD-PLANTS FOR THE COTTON-WORM.—One of the most interesting characteristics of the Cotton-worm is that it is so strictly confined to cotton as its food-plant. All attempts hitherto made to discover additional food-plants have proved futile; nor have we been able to ever make it feed successfully on other plants allied to Gossypium.[2] We have, however, long felt that there must be some other wild plant or plants upon which the species can exist, and this belief has been all the stronger since it was demonstrated two years ago from observations made by Dr. P. R. Hoy, that the larva may occur in Wisconsin and consequently out of the range of the cotton belt.[3] We have given special directions to those in any way connected with the cotton-worm investigation to search for such additional food-plants, but so far no additional food-plant has been discovered. Last November we received from Dr. J. C. Neal, of Archer, Fla., specimens of a plant with eggs and newly hatched larvæ which he believed to be those of Aletia but which belong to an allied species—the *Anomis erosa* Guen. The plant proved to be one of the Malvaceæ (*Urena lobata* Linn.), which is reported as quite common in that part of Florida and further south, being a tall branching and straggling weed with annual stems and perennial root, from which new shoots arise in January. It blooms from February to December, and is, in addition, a valuable fiber plant, the bark of both stem and root being very strong, and used very generally for whip and cording purposes. The leaves have three very conspicuous saccharine glands on the principal veins toward the leaf stem, and the plant, Dr. Neal reports, is much less sensitive to cold or frost than Gossypium. We find that the plant has been received by Dr. Vasey, botanist of the Department of Agriculture, from several parties in Florida, with inquiries as to the value of the fiber. *Urena lobata* was, until very recently, not known to occur in the United States. It is common on dry hill pastures almost everywhere in the West Indies and southward to Guiana and Brazil, and is also reported from Western Africa, East Indies, China and some of the Pacific islands. It seems to thrive very well in Florida, and is likely to spread to other adjacent States.

The *Anomis erosa*, the eggs and young larvæ of which were not uncommon on the leaves of the Urena, may be distinguished from Aletia by the paler, more translucent character of both egg and larva, and by the first pair of prolegs being quite obsolete, in which character it resembles the *Anomis exacta* that affects cotton in Texas. Aletia larvæ that had been fed on cotton, when placed upon the Urena refused to feed upon it, and finally perished.

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[1] This department is edited by PROF. C. V. RILEY, Washington, D. C., to whom communications, books for notice, etc., should be sent.

[2] The only partial success in this line is that mentioned in our Bulletin on the Cotton-worm, p. 12.

[3] See Report on Cotton Insects, Department of Agriculture, 1879, p. 89.

We recently took occasion to carefully examine the Malvaceous plants in the herbarium of the Department of Agriculture with some quite interesting results, although a herbarium is naturally the least favorable place one can choose for an entomological investigation of this character, as plants that are least injured by insects are most apt to be collected, and the mode of preserving the plants still further reduces the chances of finding traces of Aletia, because only one side of the leaf is available for examination. How small this chance is, may be illustrated by the fact that on the specimens of Gossypium in the herbarium, no Aletia eggs or egg-shells could be discovered, and that only one specimen showed any trace of being injured by any insect whatever. Nevertheless a number of eggs or fragments of such—some of them from their structure very closely related to Aletia were found on the following plants:—*Malvastrum spicatum* from Florida and Nicaragua; *Urena ribesia* (which is considered a form of *U. lobata)*, from Southern Florida; *Pavonia typhaleoides* from Cuba; *Sida glomerata* from Cuba.

One object of this examination was to discover, if possible, the particular Malvaceous plant upon which Aletia feeds in the States north of the cotton belt, but this proved to be an almost complete failure, because the herbarium contained only six specimens of such plants from the more northern States, not counting sixteen specimens cultivated in the agricultural grounds at Washington. However, on a specimen of *Sida spinosa* from York county, Penna., an egg was found which has every appearance of that of Aletia.

We would earnestly call upon entomologists who may read these pages to aid us in obtaining evidence of the food-plant of the insect in the more northern States by an examination of the plants indicated by an asterisk in the following list, as it is upon such that the insect will probably be found at some future time, but only late in the season:

LOCALITIES FOR MALVACEOUS PLANTS FROM GRAY'S FLORA.

Althæa officinalis L.—Salt marshes coast of New England and New York. (Nat. from Eu.)

Malva rotundifolia L.—Waysides and cultivated grounds, common. (Nat. from Eu.)

" *sylvestris* L.—Waysides. (Adv. from Eu.)

" *moschata* L.—Has escaped from gardens to wayside. (Adv. from Eu.)

" *alcea* L.—Has escaped from gardens in Chester Co., Penn. (Adv. from Eu.)

Callirrhoë triangulata Gray.—Dry prairies, Wisconsin, Illinois, and southward.

" *alcæoides* Gray.—Barren oak lands, Southern Kentucky and Tenn.

Napæa dioica L.—Limestone valleys, Pennsylvania and southward to the valley of Virginia, west to Ohio and Illinois, rare.

**Malvastrum angustum* Gray.—Rock island in the Mississippi, Ills.

* " *coccineum* Gray.—Abounds on the plains from Iowa and Minnesota westward.

**Sida napæa* Cav.—Rocky river banks, Penna., York Co., Kanawha Co., Va. (Cultivated in old gardens.)

Sida elliottii T. & G.—Sandy soil, Southern Virginia and southward.
* " *spinosa* L.—Waste places, common southward.
Abutilon avicennæ Gærtn.—Waste places, escaped from gardens. (Adv. from India.)
Modiola multifida Mœnch.—Low grounds, Virginia and southward.
Kosteletzkya virginica Presl.—Marshes on the coast, New York to Virginia and southward.
Hibiscus moscheutos L.—Brackish marshes along the coast, sometimes extending up rivers far beyond the influence of salt water (as above Harrisburg, Penna.), also Onondaga lake, N. Y., and westward, usually within the influence of salt springs.
" *grandiflorus* Michx.—Illinois and southward.
" *militaris* Cav.—River banks, Pa., to Ill. and southward.
" *trionum* L.—Escaped from gardens or grounds. (Adv. from Eu.)
" *syriacus* L.— " " " " "

Of these twenty-two species, eight of which are introduced, at least eleven are not likely to occur in Wisconsin, so that the number of plants upon which the insect will probably be found is very limited if, as is most probable, the plant really is one of the Malvaceæ.—*C. V. Riley.*

ARRANGEMENT OF N. A. CYNIPIDÆ BY DR. MAYR.—I published in the March NATURALIST[1] a list of American Cynipidæ as generically arranged by Dr. G. L. Mayr, of Vienna. The list contains less than half of our species, I think, and it does not include all that I sent to him. Several species differ from established genera so far that they will probably form the types of new genera.

I was surprised to find that he recognizes but one American species as belonging to the genus *Cynips*, for this genus contains eighteen European species. His new genera, *Acraspis*, *Loxaulus*, *Holcaspis* and *Belenocnema* are, so far as known, exclusively American. The last named genus is founded on a Floridian species sent him by Mrs. Mary Treat. He describes it, and gives it the name of the discoverer, *B. Treatæ*. *Loxaulus* contains only my *C. q. mammula*, described in the *Canadian Entomologist* last summer. Of the twenty-nine genera recognized by Dr. Mayr, I have mentioned only those containing American species found in his collection. Probably other genera will be found represented here when our fauna shall have been thoroughly worked out. The three Californian and the four Arizonian species which I sent him, fall into European genera, while the seven species included in the four new American genera, are all from the region east of the base of the Rocky mountains.

Andricus palustris O. S. and *Dryophanta polita* B. are placed by Mayr only provisionally in their genera.—*H. F. Bassett, Waterbury, Conn.*

[The list is a valuable addition to the literature of our Cynipidæ. Dr. Mayr has been for some time engaged upon his revision of this family, and its appearance has been anxiously awaited. It will, so far as it embraces our species, replace the list given by Baron Osten Sacken, in the *Proceed. Entomolog. Soc. Phila.*, IV. pp. 379–80, published in 1865, since which time, many new species have been discovered, and generic rearrangements necessitated. The list given above numbers fifty-two species, and from the statement made by Mr. Bassett, that "it contains less than half of our species," it appears that a full list of our Cynipidæ will consist of at least a hundred species. Such a list, Mr. Bassett hopes to publish ere long, when he shall have determined the generic position of such species as are not included above.—Ed.]

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[1] The editor does not see page proofs and this list was unfortunately separated from its connections in the March number.

MODE OF FEEDING OF THE LARVA OF DYTISCUS.—Mr. Edward Burgess, in a paper on the mouth in the larva of Dytiscus[1] gives an interesting illustrated account of the mode of taking food through the sickle-like jaws, and shows conclusively that instead of being mouthless, as ordinarily assumed, this larva has a very wide mouth, though the lips are locked together by a dove-tailed groove joint. The food is sucked into an oval opening at tip of the jaws, and drawn along a canal on the inside to a basal outlet which, when the jaws are closed on a victim, is brought into the corner of the mouth, so that the larva sucks up its victim's fluids "as a man inhales the smoke of a pipe stuck in the side of his mouth."

ENTOMOLOGICAL NOTES.—Mr. Wm. H. Edwards argues in the December number of the *Canadian Entomologist*, that *Limenitis arthemis* is single-brooded, and not double-brooded, as Mr. Scudder has maintained.——Dr. J. A. Osborne has recently recorded further experiments proving the occurrence of parthenogenesis in *Gastrophysa raphani*, but believes that it has no place in the economy of the insect analogous to that of bees and wasps, but that it is concomitant of a prevalent species supplied with abundant food of a stimulating character —— Professor Fernald, in the December number of *Papilio*, gives reason to believe that the Tortricid genus Exartema is equivalent to Eccopsis Zeller, which has priority.——We regret very much to learn that Mr. A. R. Grote has returned from Europe in quite poor health, and hope he may soon recover. While abroad he sold his collection of Noctuidæ to the British Museum at a price variously stated from $3000 to $5000. It is greatly to be regretted that the collection should ever have left this country.——The news of the death of Mr. Jules Putzeys, on January 2d, will be received with regret by coleopterists. Putzeys is well known as the author of several careful monographs of some of the most difficult groups and genera of Carabid beetles. In accordance with the wishes of the deceased, his valuable collection has been donated to the Entomological Society of Belgium.

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[1] Proc. Bost. Soc. Nat. Hist. XXI, pp. 223–8.